

In The Claims

Kindly enter the claim amendments, without prejudice, as set forth below. A complete listing of the claims is provided, with a parenthetical indication of the status of each claim and markings to show current changes.

CLAIMS

1) (Currently amended) A ~~continuous casting machine for metallic products comprising a molten metal containment device for containment of melt between the~~ crystallising~~crystallizing~~ rollers (38, 39) of said ~~casting machine, where said~~ crystallising~~a casting machine, wherein said~~ crystallizing rollers (38, 39) are able to rotate around two ~~axes (A1, A2) substantially horizontal~~ rotation axes (A1, A2), and are placed in positions such as to define between them a zone of minimal distance (50) between the surfaces of said crystallising rollers (38, 39) and so to allow, in the space above said zone of minimal distance (50), the accumulation of a ~~molten metal bath~~melt poured from a tundish or other means of distribution, each of ~~said crystallising~~the crystallizing rollers (38, 39) comprising one or more shoulder surfaces (40, 41) lying in a plane normal to the ~~axis of rotation axes (A1, A2) of said crystallising roller (38, 39)~~ the crystallizing rollers (38, 39), said containment device comprising, on each side of ~~said crystallising~~the crystallizing rollers (38, 39)

- a lateral containment plate (47) able to fit tightly against at least part of each of said shoulder surfaces (40, 41) of ~~said crystallising rollers (38, 39) so as to contain said molten metal bath;~~whereby it contains the melt;

-- ~~pressing means of providing pressure (37) able to move said the lateral containment plate (47) so as to bring it close to and hold it tightly against said the shoulder surfaces (40, 41) of both said crystallising rollers (38, 39) and/or remove said the lateral containment plate (47) from both said the shoulder surfaces (40, 41) of said crystallising rollers;~~

~~where said~~ wherein the lateral containment plate (47) is fixed to ~~said the~~ the pressing means of ~~providing pressure (37) through an articulated joint, said containment device being~~ characterised by the fact that ~~said the~~ articulated joint comprises a flexible connecting

element (1) able to sustain ~~said-the~~ lateral containment plate (47) allowing ~~the-a~~ horizontal pivoting at least around ~~ana pivot~~ axis of ~~pivoting (X)~~ horizontal and substantially normal to ~~said-axes-ofthe~~ rotation axes (A1, A2) of ~~said-crystallising-rollers~~ (38, 39).

2) (Currently amended) The containment device according to claim 1, wherein ~~said- the~~ flexible connecting element (1) comprises a flexible tubular sleeve ~~-(1)~~.

3) (Currently amended) The containment device according to claim 2, wherein ~~said~~ flexiblethe tubular sleeve (1) ~~comprising-comprises~~ one or more corrugated walls, like a bellows ~~able-to-allow-said, allowing the~~ horizontal pivoting of ~~said-the~~ containment plate (37) at least around ~~said-axes-of-pivoting (X)~~.

4) (Currently amended) The containment device according to ~~claims 2 and/or claim 3~~, wherein ~~said-flexible-the~~ tubular sleeve (1) is connected to ~~saidthe~~ pressing means of ~~providing-pressure (37)~~ and to ~~said-the~~ lateral containment plate (47) in ~~such-a way, and~~ has such flexibility, to sustain the latter functioning substantially as ~~whereby it supports~~ the containment plate like a cantilever shelf.

5) (Currently amended) The containment device according to ~~one or more of the claims from 2 to claim 4~~, wherein ~~said-flexible-the~~ tubular sleeve (1) ~~has the shape such as to be~~ is part of a route ~~passage~~ for a cooling fluid ~~able to cool at least said one or more for~~ cooling the one or more corrugated walls of said flexible tubular sleeve (1).

6) (Currently amended) The containment device according to claim 5, wherein it comprises an internal body (5) ~~of shape such, and placed inside said-flexible-the~~ tubular sleeve (1) ~~in a way such, to define), whereby it defines~~ one or more internal spaces between ~~said-the~~ internal body (5) and the ~~internal wall(s) of said-flexible-tubular-sleeve~~ (1), ~~where said one or more internal-corrugated walls, the spaces are-being~~ part of said route ~~passage~~ for a cooling fluid.

7) (Currently amended) The containment device according to claim 6, wherein ~~said~~the internal body comprises a lateral surfaces of shape and such dimensions such that each point of said the lateral surface is ~~found~~ substantially at a distance, from the ~~elosest~~closest point of the ~~internal~~corrugated walls of ~~said flexible tubular sleeve (1), when said flexible~~the tubular sleeve (1) is in undeformed conditions, ~~never, not~~ less than a ~~predetermined minimal~~predefined minimum distance (H) and that ~~said flexible~~wherein ~~the~~ tubular sleeve (1) ~~comprising~~comprises one or more ~~nervatures~~ribs (13a, 13b, 13c, 13d) ~~which surround the surrounding~~ transversal sections of ~~said flexible~~the tubular sleeve (1), and one or more grooves (~~11a, 11b, 11c, 11d~~) of closed annular shape interposed between two of ~~said circular nervatures~~ribs (13a, 13b, 13c, 13d) of closed annular shape.

8) (Currently amended) The containment device according to claim 7, wherein ~~said nervatures~~there are provided at least two ribs (13a, 13b, 13c, 13d) ~~are at least two, have circular shape and are closed on themselves, said one or more grooves (11a, 11b, 11c, 11d) have circular shape closed on themselves and said the~~ external surfaces of ~~said~~the internal body (5) comprises one or more notched areas (10a, 10b, 10c, 10d), each of which has a surface of ~~shape and such dimensions such that each point of it~~s points is ~~found~~ substantially at a distance, from the ~~elosest~~closest point of the internal walls of said undeformed flexible tubular sleeve (1), greater than ~~said~~the predetermined minimal distance (H), so as to assist the flow of said cooling fluid from a cavity below a first of said circular ~~nervatures~~ribs (13a, 13b, 13c) to the cavity below a second of said circular ~~nervatures~~ribs (13b, 13c, 13d) closer to the outlet of the cooling circuit.

9) (Currently amended) The containment device according to claim 8, wherein ~~said external surface of said internal body (5) comprising a plurality of notched areas (10a, 10b, 10c, 10d) is placed to form two groups, where each of said two groups is found to the~~ wherein one group is on a side of said the external surfaces opposite ~~with respect to the side on which is found the other of said two groups~~another group is.

10) (Currently amended) The device according to claims 8 and/or 9, wherein ~~said internal body~~ said the one or more notched areas (10a, 10b, 10c, 10d) have substantially oblong shape and are located substantially parallel to the closest of said one or more grooves (11a, 11b, 11c, 11d) of ~~said flexible tubular sleeve (1)~~.

11) (Currently Amended) The containment device according to ~~one or more claims from 5 to claim~~ 10, wherein each of ~~said the~~ internal spaces between ~~said the~~ tubular sleeve (1) and ~~said the~~ internal body (5) is closed by a wall (9) close to one end of ~~said the~~ tubular sleeve ~~by a wall (9)~~, and ~~in said wherein the walls are etched have~~ one or more apertures (14), located around ~~said flexible the~~ tubular sleeve (1) and ~~able to allow~~ allowing the flow of ~~said the~~ refrigerant liquid from ~~said flexible the~~ tubular sleeve (1).

12) (Currently amended) The containment device according to ~~one or more of the claims from 6 to claim~~ 11, wherein ~~that said the~~ internal body (5) has shape and the tubular sleeve (1) have shape, dimensions such, and ~~said flexible tubular sleeve (1) is connected to said means of providing pressure (37) and to said lateral containment plate (47) in a way such, and has shape, dimensions and such flexibility, that said internal body (5) and said flexible tubular sleeve (1) during normal functioning do not come into contact with each other, even under the effect of the weight of said lateral containment plate (47) and the support (2) onto which said plate (47) is optionally fixed, even due to the effect of said horizontal pivoting due to the geometric imperfections of said crystallising rollers (38, 39).~~

13) (Currently amended) The containment device according to ~~one or more of the preceding claims~~ claim 12, wherein it comprises means for ~~the measurement of~~ measuring the pressure of ~~said the~~ cooling fluid inside ~~said the~~ internal space, and means for controlling ~~the control of said pressure of said the cooling fluid, able to control the pushing of said lateral containment plate (47) against said crystallising rollers (38, 39) on the basis of said pressure of cooling fluid inside said internal space.~~

14) (Currently amended) The containment device according to ~~one or more of the preceding claims~~claim 13, wherein it comprises one or more mechanical ~~butts~~abutments ~~(160) able to limit said~~limiting horizontal pivoting of ~~said~~the containment plate (47).

15) (Currently amended) A ~~molten-metal~~melt containment device between the ~~crystallising~~two crystallizing rollers (38, 39) of a continuous casting machine for metallic products, ~~where said crystallising~~wherein the crystallizing rollers (38, 39) are able to rotate around two ~~substantially horizontal~~horizontal rotation axes (A1, A2), and are located in positions such as to define between them a zone of minimal distance (50) ~~between the surfaces of said crystallising rollers (38, 39)~~ and to allow, in the space above ~~said~~the zone of minimal distance (50), the accumulation of a ~~molten-metal bath~~melt poured from a tundish or from other means of distribution, ~~each of said crystallising means, each of the crystallizing rollers (38, 39) comprising one or more shoulder surfaces (40, 41) lying in on a plane normal to the axis of rotation of said crystallising roller (38, 39), said axes, the~~ containment device comprising, on each side of ~~said crystallising~~the ~~crystallizing rollers (38, 39)~~

- a lateral containment plate (47) able to fit tightly against at least part of said shoulder surfaces (40, 41) of both ~~of said crystallising~~crystallizing rollers (38, 39) ~~so as to whereby they contain said molten-metal bath; the melt;~~

- pressing means of providing pressure (37) able to move ~~said lateral containment plate (47) so as to move it close to and press it against said~~and remove the lateral containment plate (47) towards and from the shoulder surfaces (40, 41) of both said ~~crystallising~~crystallizing rollers (38, 39) ~~and/or remove said lateral containment plate (47) of said shoulder surfaces (40, 41) of both of said crystallising rollers;~~; ~~the said lateral containment plate (47) is fixed to said~~the pressing means of providing pressure (37) through a plurality of ~~supports-mountings~~ (20) able to sustain the weight at least of said lateral containment plate (47), ~~where~~wherein each of said ~~supports-mountings~~ (20) is able to apply onto said lateral containment plate (47) a force with at least a horizontal component, said plurality of supports being placed in a way such that at least one of said supports (20) is positioned at a greater height than the other of said ~~supports-mountings~~ (20).

16) (Currently amended) The device according to claim 15, wherein ~~said support~~the mountings (20) are at least three ~~in number~~and are placed to form a triangle.

17) (Currently amended) The containment device according to ~~the claims 15 and/or claim~~ 16, wherein ~~said~~the triangle has height equal to at least 20-30% of the height of ~~said~~the containment plate (47).

18) (Currently amended) The containment device according to ~~one or more of the claims from 15 to claim~~ 17, wherein ~~said~~the triangle has a width, according to a horizontal coordinate, equal to at least 20% of ~~the~~a width of ~~said~~the containment plate (47).

19) (Currently amended) The containment device according to ~~one or more of the claims from 15 to claim~~ 18, wherein each of ~~said support~~the mountings (20) comprises a cursor (22) fixed onto a first support (2) on which in turn is fixed ~~said lateral~~the containment plate (47), and a tubular sleeve (21), fixed onto a second support (3) fixed in turn onto ~~said the pressing means of providing pressure (37)~~, said cursor (22) being fixed to said sleeve (21) in a way allowing it to move with respect to it.

20) (Currently amended) The containment device according to ~~one or more of the claims from 15 to claim~~ 19, wherein each of ~~said support~~mountings (20) comprises a spring (23) able to apply an at least horizontal force on said cursor (22).

Applicant requests examination of the newly amended claims.

If any matters remain unresolved, the Examiner is encouraged to contact the undersigned by telephone at (617) 557-2900.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 50-0734** referencing docket no. NB3594/1182.017. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

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